CONTENTS

Articles		
P. T. Williams and P. A. Horne	1	The role of metal salts in the pyrolysis of biomass
CJ. Winter	15	Solar cities
D. B. Snyman and J. H. R. Enslin	27	Centralized PV generation and decentralized battery storage for cost effective electrification of rural areas
E. Ntibarufata, M. Hasnaoui, P. Vasseur and E. Bilgen	33	Numerical study of natural convection in habitat with direct gain passive window systems
O. M. M. Eltom and A. A. M. Sayigh	41	Adsorption capability of charcoal: a comparison study of some activated and non-activated charcoal samples
R. Zhang and C. E. Nielsen	47	Study of surface convective zone behavior of solar pond in laboratory
R. Y. Nuwayhid and F. Moukalled	53	The effect of planet thermal conductance on conversion of solar energy into wind energy
M. M. El-Kassaby	59	Rotation and incidence angles for parabolic trough
A. Hasan and A. A. Sayigh	69	Some fatty acids as phase-change thermal energy storage materials
M. M. Elsayed and K. A. Fathalah	77	Solar flux density distribution using a separation of variables/ superposition technique
<u>Data Bank</u> J. Cañada, J. M. Pinazo, J. V. Boscá, V. Ruiz and P. Iglesias	89	The diffuse fraction of daily global radiation
J. A. Martinez-Lozano, M. P. Utrillas and V. Gomez	95	Estimation of the diffuse solar irradiation from global solar irradiation. Daily and monthly average daily values
M. A. C. Chendo and A. A. L. Maduekwe	101	Hourly distributions of global and diffuse solar radiation in Lagos, Nigeria
<u>Technical Note</u> A. Elagöz	109	Legal and administrative measures for energy savings in non-industrial buildings in the member states of the EC
O. M. M. Eltom and A. A. M. Sayigh	113	A simple method to enhance thermal conductivity of charcoal using some additives
J. Franco and L. Saravia	119	A new design for a passive atmospheric multistage still
N. Nijegorodov, P. K. Jain and S. Carlsson	123	Thermal-electrical, high efficiency solar stills
G. Karthikeyan, A. Mani and S. S. Murthy	129	Analysis of an absorption refrigeration system with transfer tank

Contents

-		
ĸ	eview	

H. Jing and R. H. B. Exell	Simulation and sensitivity analysis of an intermittent solar-powere	
		charcoal/methanol refrigerator

WREN 151

CIICE	153
I glandar at Evante	174
Calendar of Events	100

Articles		
H. Nfaoui, J. Buret, A. A. M. Sayigh and P. D. Dunn	155	Modelling of a wind/diesel system with battery storage for Tangiers, Morocco
M. W. Bassey, P. H. Oosthuizen and J. Sarr	169	Using heated chimneys and reduced collector air gap height to improve the performance of indirect passive solar dryers
P. K. Jain, N. Nijegorodov and C. G. Kartha	179	Role of solar energy in development in Botswana
A. H. Zahed and M. M. Elsayed	189	Transient performance of a natural ventilation solar kiln
I. A. Raja and J. W. Twidell	199	Statistical analysis of measured global insolation data for Pakistan
M. Bosanac, A. Brunotte, W. Spirkl and R. Sizmann	217	The use of parameter identification for flat-plate collector testing under non-stationary conditions
Data Bank S. Topcu and S. Oney	223	The estimation of hourly total irradiation for cloudy sky in Istanbul
A. M. Omer	227	Diffuse solar radiation over Shambat, Khartoum North
<u>Technical Notes</u> Lj. Sinjeri and P. Kulišić	235	Solar radiation on variously oriented collectors in Croatia
G. M. Abdull Aziz and M. A. Mukbel	241	Thermal performance of solar water heater system in Yemen
C. Armenta-Deu	249	Capacity effects on the determination of the state-of-charge in lead-acid cells
A. K. Sharma, R. Dwivedi, S. K. Srivastava and C. M. Pathak	257	Performance analysis of a modified solar array under shadow conditions
E. C. Njau	261	Predictability of wind speed patterns
F. A. Banat, S. E. El-Sayed and S. A. El-Temtamy	265	Carnalite salt gradient solar ponds: an experimental study
WREN	271	
Calendar of Events	273	

Contents

37

NUMBER 3

Articles		*** * * * * * * * * * * * * * * * * * *
M. Dupont, C. Celestine and T. Feuillard	275	Natural ventilation in a traditional house on a West Indies Island (Guadeloupe): field testing on site and in a wind tunnel
A. M. Tayeb	283	Solar-augmented foam-mat drying of fruits
V. H. Morcos	291	Optimum tilt angle and orientation for solar collectors in Assiut, Egypt
L. Mangialardi and G. Mantriota	299	Automatically regulated C.V.T. in wind power systems
S. Sinha and S. Kumar	311	Theoretical evaluation of air regenerative solar distiller integrated with aspirator
B. Maad and A. Belghith	319	The intensification of the heat transfer in passive solar systems using grid generated turbulence: spectral study
M. M. El-Kassaby and M. H. Hassab	327	Investigation of a variable tilt angle Australian type solar collector
S. Kumar, T. C. Kandpal and S. C. Mullick	333	Effect of wind on the thermal performance of a parabolloid concentrator solar cooker
E. Zamfir, C. Oancea and V. Badescu	339	Cloud cover influence on long-term performances of flat plate solar collectors
D. B. Snyman and J. H. R. Enslin	349	Novel technique for improved power conversion efficiency in systems with battery back-up
Technical Note E. Scerri and C. Iskander	359	Hands-on experience of the setting-up of a stand-alone photovoltaic demonstration project in Malta
WREN Newsletter	365	
Calendar of Events	369	

Articles		
C. P. Tso and J. Zhao	371	A study in forced convection of water in a single uneven planar rock fracture for geothermal application
A. A. Fatani, G. M. Zaki and A. Al-Turki	377	Improving the yield of simple basin solar stills as assisted by passively cooled condensers
M. A. Mosalam Shaltout and M. T. Y. Tadros	387	Typical solar radiation year for Egypt
K. M. Siddiqui and C. Z. M. Kimambo	395	Development of a compact integral solar water heater for Africa
V. H. Morcos	401	Some experimental and theoretical studies of a single basin solar still

S. Janjai, A. Esper and W. Mühlbauer	409	A procedure for determining the optimum collector area for a solar paddy drying system
Data Banks		
S. Coppolino	417	A new correlation between clearness index and relative sunshine
M. Bashahu and P. Nkundabakura	425	Analysis of daily global irradiation data for five sites in Rwanda and one in Senegal
Technical Notes	427	Flat whate collector willing hilling for Common
R. D. Hazel and L. P. Langevine	437	Flat plate collector utilizability for Guyana
S. M. Shaahid and M. A. Elhadidy	441	Wind and solar energy at Dhahran, Saudi Arabia
A. M. Zaki, M. N. Eskander and	447	Control of maximum-efficiency PV-generator irrigation system using
M. M. Elewa		PLC
M. Bashahu and D. Laplaze	455	An atmospheric model for computing solar radiation
WREN Newsletter	459	

Articles C. P. Jacovides, C. Varotsos, N. A. Kaltsounides, M. Petrakis and D. P. Lalas	465	Atmospheric turbidity parameters in the highly polluted site of Athens basin
K. A. Antonopoulos and F. Democritou	471	Two wall-coefficients and two climatic parameters for estimating the maximum periodic wall heat gain
S. Kumar	481	Return analysis of commercial solar thermal devices
W. Lawrance, D. Langridge and D. Johnston	489	Low wind speed wind generation scheme
S. Deambi	495	Issues and prospects vis à vis Indian PV Commercialization Programme
V. H. Morcos	505	Aerodynamic performance analysis of horizontal axis wind turbines
M. M. Elsayed	519	Analysis of air dehumidification using liquid desiccant system
N. Nijegorodov, K. R. S. Devan, P. K. Jain and S. Carlsson	529	Atmospheric transmittance models and an analytical method to predict the optimum slope of an absorber plate, variously oriented at any latitude
J. B. Kandpal, R. C. Maheshwari and T. C. Kandpal	545	Air pollution from biomass combustion in domestic cookstove
Data Bank R. 'L. Fagbenle and T. G. Karayiannis	551	Harmonic analysis of monthly solar radiation in Nigeria
Technical Note K. Sopian, J. Sahari, M. Y. H. Othman and A. Z. Lubis	561	Performance monitoring of a thermosyphon solar hot water heater with a parallel thermoplastic natural rubber tube absorber
M. A. Al-Nimr	579	Dynamic behaviour of a cylindrical matrix solar air heater

Contents vii

Q. Ahsan and A. Hoque

585 Probabilistic model of a wind turbine generator for use in generation expansion analysis

WREN Newsletter

593

NUMBER 6

Special Issue WORLD RENEWABLE ENERGY NETWORK Biographies of WREN Members (up to September 1994)

<u>Articles</u>		
E. C. Njau	793	An electronic system for predicting air temperature and wind speed patterns
L. Mangialardi and G. Mantriota	807	Continuously variable transmissions with torque-sensing regulators in waterpumping windmills
A. Zeroual, E. L. Agouriane, M. Ankrim and A. J. Wilkinson	825	A new method for testing the performance of flat-plate solar collectors
J. B. Kandpal, R. C. Maheshwari and T. C. Kandpal	833	Release of air pollutants in indoor air: comparison of traditional and metallic cookstoves
K. M. K. Abu-Abdou	839	Analysis of continuous-flow thin-film solar stills
A. Bennouna and Y. Ijdiyaou	847	Water pumping using a photovoltaic d.c. solar pump without energy storage
N. A. Rahim	855	High performance domestic solar desalination system
Data Bank		
J. A. Martinez-Lozano and M. P. Utrillas	863	Validation of the monthly mean hourly solar irradiance Helios model from Valencia (Spain) experimental data
Technical Notes		
A. Hasan	869	Solar space and domestic water heating for West Bank
E. Al-Bassam and G. P. Maheshwari	873	Performance evaluation of air-conditioning units
Press Release: World Renewable Energy Congress	879	
WREN Council Meeting Report	883	
Official Members of WREN	887	

<u>Articles</u>		
J. Chandrasekaran and S. Kumar	891	Daily utilizability from hourly cumulative frequency curves
M. A. Hammad	897	Experimental study of the performance of a solar thermal-photovoltaic integrated system
M. A. H. Ahmed	907	Experience with a surface floating PV pumping system: a case study in Khartoum
N. K. Ghaddar	911	Stratified storage tank influence on performance of solar water heating system tested in Beirut
F. A. Banat, S. E. El-Sayed and S. A. El-Temtamy	927	A transient model of a laboratory-scale carnalite salt gradient solar pond
Data Bank A. De Miguel, J. Bilbao, S. Salsón and A. Lage	933	Solar radiation and sunshine hour maps in Castilla and León region (Spain)
Technical Notes R. Kumar, S. C. Kaushik and H. P. Garg	941	Transient analysis of evacuated tubular solar collector with finite difference technique
S. Rehman and T. O. Halawani	949	Statistical characteristics of wind in Saudi Arabia
Announcement	957	
Volume Contents and Author Index for Vol. 4, 1994	i	

